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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,469	12/27/2004	Seung-Woo Kim	2400/2	2679

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EXAMINER

RICHEY, SCOTT M

ART UNIT PAPER NUMBER

2877

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10/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,469	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Scott M. Richey	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 is/are allowed.
- 6) ☒ Claim(s) 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.


### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

  
**PATRICK CONNOLLY** 10.27.2007  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

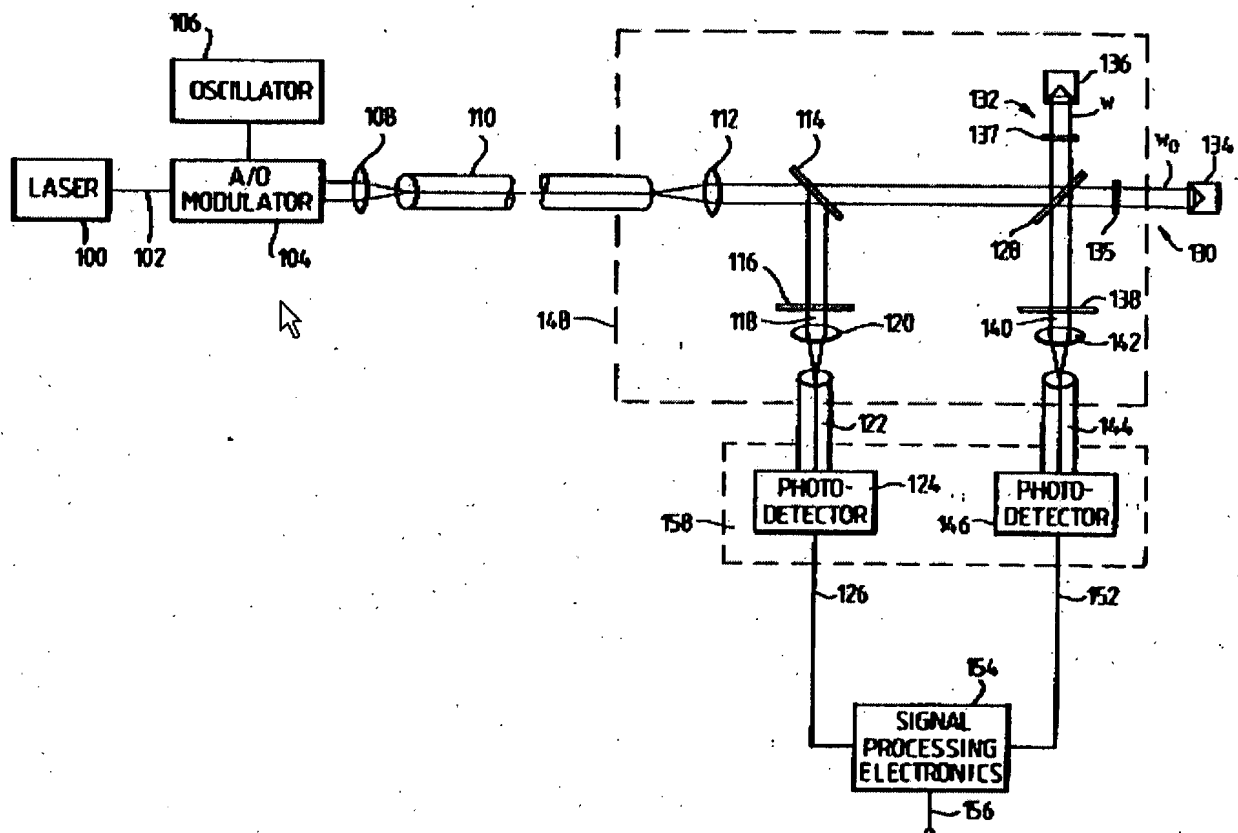
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chaney (previously cited US 5,274,436) in view of Xu et al. (previously cited US 5,796,482) hereinafter Xu.



Chaney teaches a heterodyne laser interferometer, comprising: a heterogeneous mode laser light source for generating a light beam having two frequency components that are linearly polarized and perpendicular to one another (100, 102, 104, 106); an optical interferometer coupled to receive a first portion of the light beam from the laser light source and to generate a measured signal therefrom, said first portion including portions of the two frequency components (128, 134, 136); a polarizer coupled to

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receive said remaining portion of the light beam, the polarizer having a polarization axis that is tilted at  $45^\circ$  relative to the two frequency components of the light beam (116); a photodetector coupled to receive light from the polarizer and in response thereto generate an electrical reference signal (124); wherein the optical interferometer comprises: a polarization splitter for splitting the light beam into a first of the two frequency components and a second of the two frequency components (128); a fixed reflecting mirror for receiving the first frequency component (136); a movable reflecting mirror for receiving the second frequency component (134); a polarization combiner for combining the first frequency component reflected by the fixed reflecting mirror with the second frequency component reflected by the movable reflecting mirror, said polarization combiner having a polarization axis that is tilted at  $45^\circ$  relative to the two frequency components of the light beam (128, 138); and a photodetector for receiving combined light from the polarization combiner and in response generating the measured signal as an electrical signal (146).

Chaney is silent to the laser source being a helium-neon laser. It is well known to use a HeNe source, as they are inexpensive. For example, see Bowen et al. It would have been obvious to one of ordinary skill in the art at the time of invention to use a HeNe laser for generating the laser light of Chaney's interferometer to save money.

Chaney is silent to the interferometer comprising a frequency converter, wherein the frequency converter comprises: a local oscillator for generating a local signal approximately equal to a beat frequency of the reference signal; a signal splitter for splitting the local signal into first and second local signals; first and second mixers for

multiplying the reference signal with the first and second local signals respectively to provide first and second output signals, respectively; a first filter for eliminating from the first output signal a signal corresponding to the sum of the reference signal and the first local signal; a second filter for eliminating from the second output signal a signal corresponding to the sum of the reference signal and the second local signal, whereby the phase measurer receives third and fourth signals passing through the first and second filters, respectively.

In the analogous art of measuring interference light, Xu teaches an apparatus for measuring heterodyned interference light, comprising: a frequency converter in Fig.1, wherein the frequency converter comprises: a local oscillator for generating a local signal approximately equal to a beat frequency of the reference signal; a superheterodyne phase measurer; a signal splitter for splitting the local signal into first and second local signals; first and second mixers for multiplying the reference signal with the first and second local signals respectively to provide first and second output signals, respectively; a first filter for eliminating from the first output signal a signal corresponding to the sum of the reference signal and the first local signal; a second filter for eliminating from the second output signal a signal corresponding to the sum of the reference signal and the second local signal, whereby the phase measurer receives third and fourth signals passing through the first and second filters, respectively. Xu's superheterodyne detection device incorporates these features "to remove noise" (col.2, ln.11-23).

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It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the superheterodyne components (Xu's elements 9-13) within the device of Chaney (i.e., in place of Chaney's element 154) to achieve less noise.

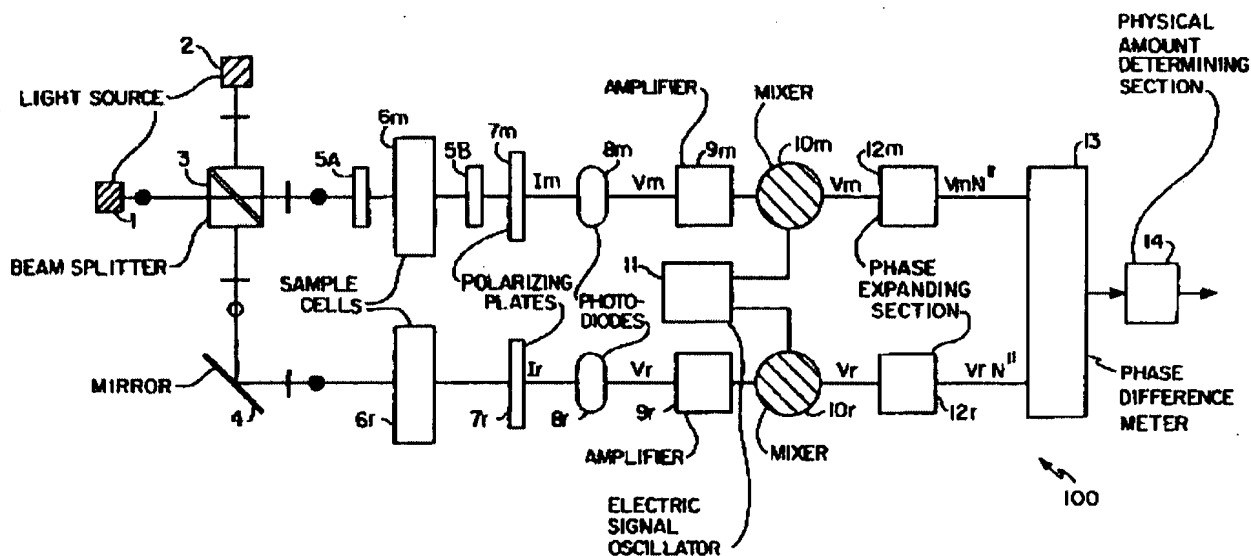


Fig. 1

### Allowable Subject Matter

Claim 13 is allowed.

While many of the components of claim 13 are known in the art, the prior art of record, taken alone or in combination, fails to disclose or render obvious their combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "**Comments on Statement of Reasons for Allowance.**"

### ***Response to Arguments***

Regarding claim 14, the applicant's arguments filed October 11, 2007 have been fully considered but they are not persuasive. The claim as set forth does not require measurement of  $f+\Delta f$  (as the applicant admits Xu does) and of  $f-\Delta f$  (which the applicant asserts Xu fails to do).

### ***Conclusion***

Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice in this Office Action mailed. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. See MPEP 2144.03 (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well-known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged



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with rebutting the well-known statement in the next reply after the Office action in which the well-known statement was made.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott M. Richey whose telephone number is (571) 270-1296. The examiner can normally be reached on Monday - Thursday, 10:00 - 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Scott M. Richey  
Patent Examiner  
Art Unit 2877

  
PATRICK CONNOLLY 10.27.2007